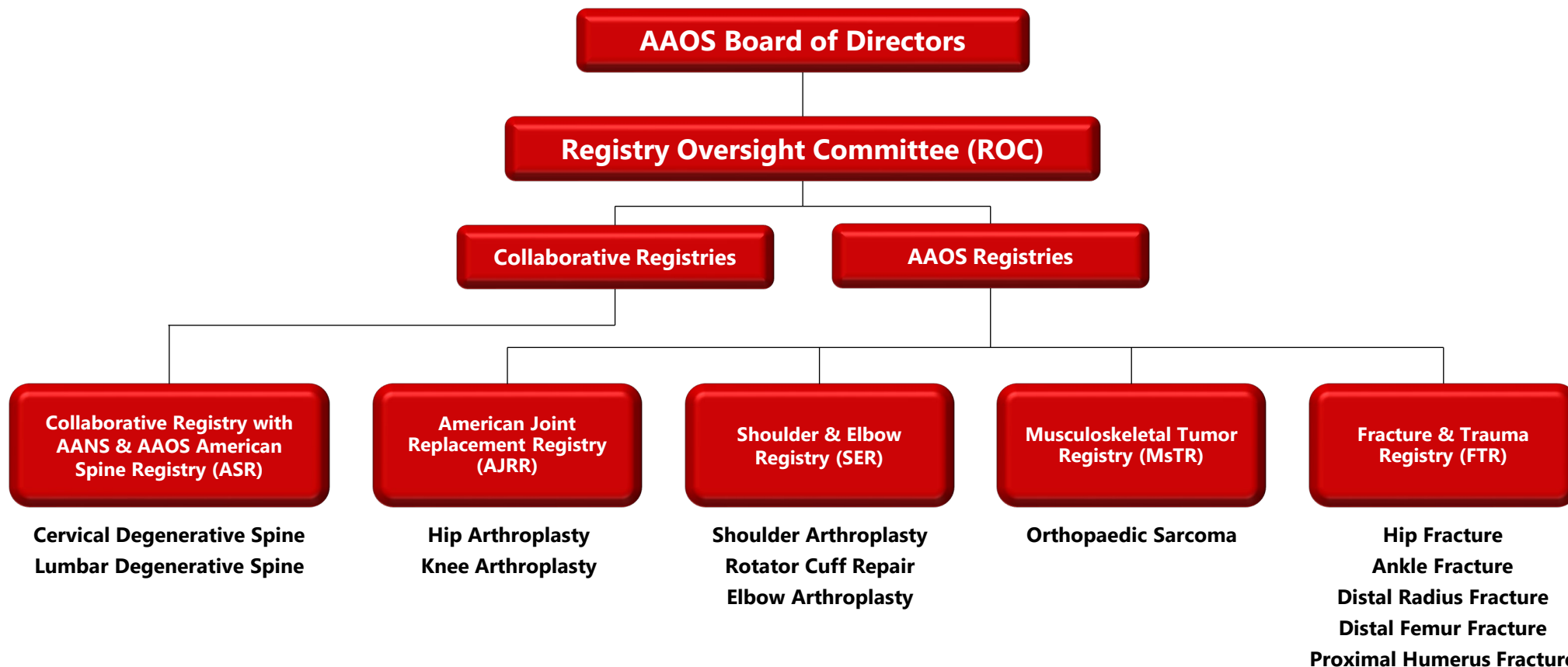# Executive Viewpoints for a New Generation of Clinical Registries: The Good, the Bad, and the Ugly

Nate Glusenkamp
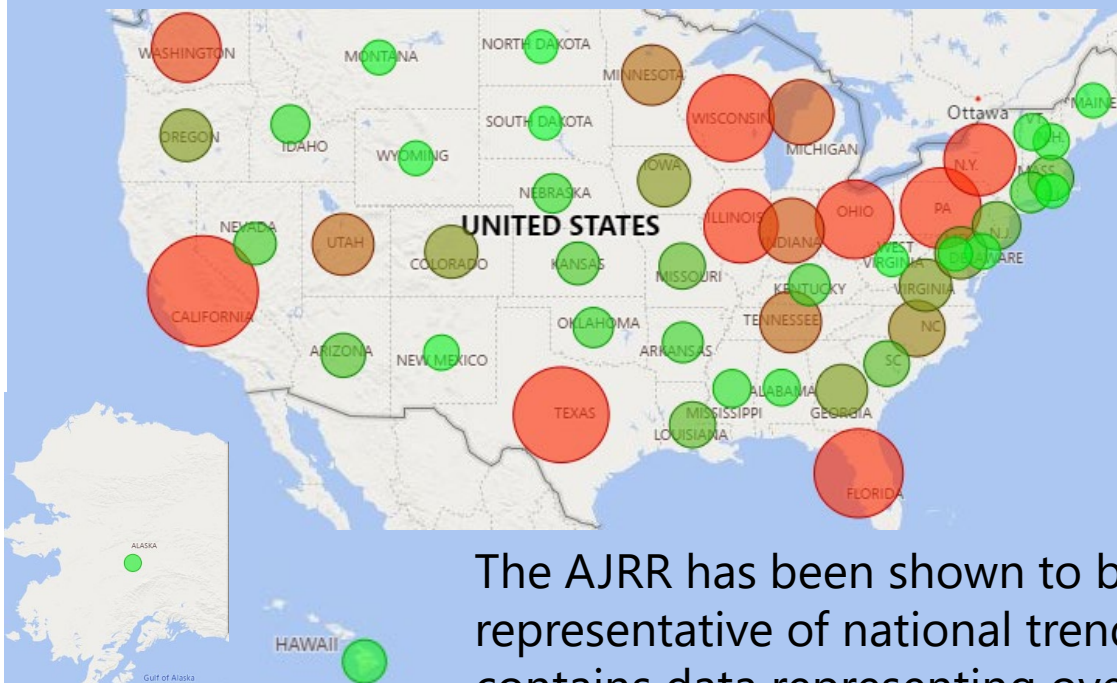
American Academy of Orthopaedic Surgeons

November 10, 2022

AAOS Family of Registries

Sites by State

Over 1,400 participating sites contracted and 14,000 registered surgeons across all 50 states.
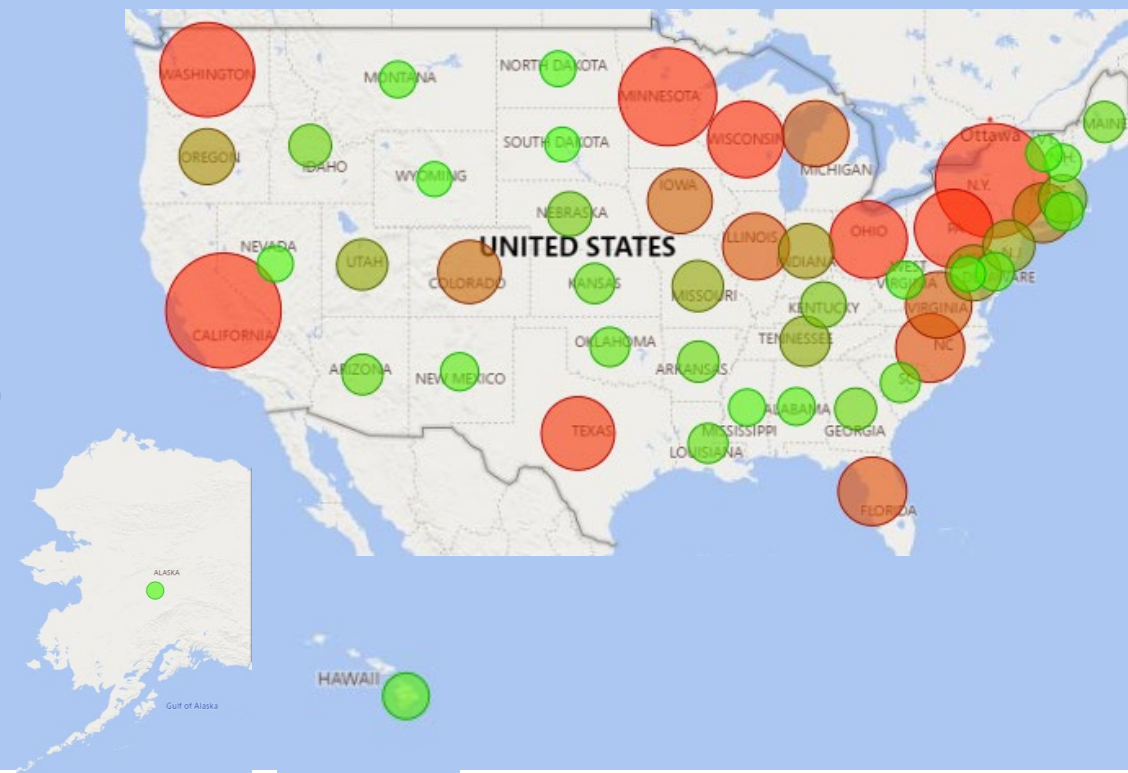
Procedures by State

The AJRR has been shown to be representative of national trends and contains data representing over 3,000,000 procedures.

ASR includes data representing over 160,000 procedures and over 120,000 patients with over 250 participating sites and 600 registered surgeons

Totals Across the Registries

	AJRR	**ASR**	**SER**
Total Procedures	3.0M	163K	20K
Total Patients	2.5M	128K	19K
Total Surgeons Represented	11K	1K	350

FTR	**MsTR**
29 sites contracted	27 sites contracted
8 sites nearing readiness for data submission in Q3/Q4 2022	11 sites nearing readiness for data submission in Q3/Q4 2022

AJRR | 2022 Annual Report Highlights
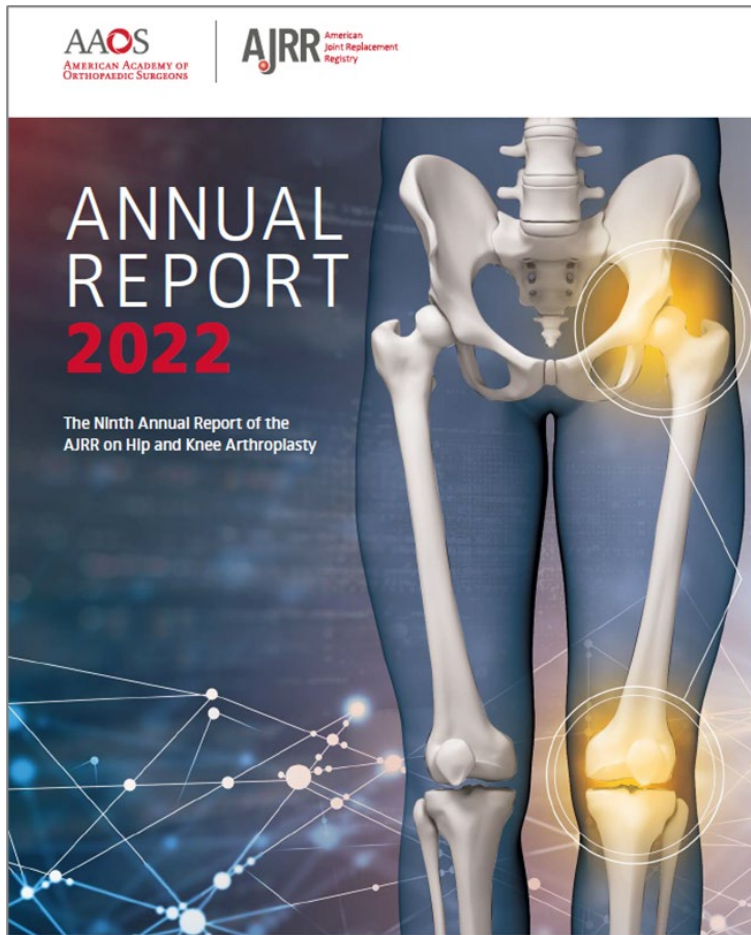
- Summary Statistics (Procedural, institution, and patient distributions)
- Data Completeness
- Hip/Knee Arthroplasty
- Revision Procedures
- Implant Utilization and Survivorship
- Patient Reported Outcome Measures (PROMs)
- Recent Publications

Figure 1.4 Distribution of Arthroplasty Procedures, 2012-2021 (N=2,550,232)

- Total Knee Arthroplasty (n=1,306,719, 51.2%)
- Total Hip Arthroplasty (n=821,640, 33.3%)
- Revision Knee Arthroplasty (n=112,852, 4.8%)
- Hemiarthroplasty (n=95,099, 3.7%)
- Revision Hip Arthroplasty (n=103,514, 4.1%)
- Partial Knee Arthroplasty (n=66,394, 2.6%)
- Hip Resurfacing (n=5,935, 0.2%)

2.8 Million hip & knee procedures

14% growth over last year

38% PROM submissions grew

57% ASC cases up
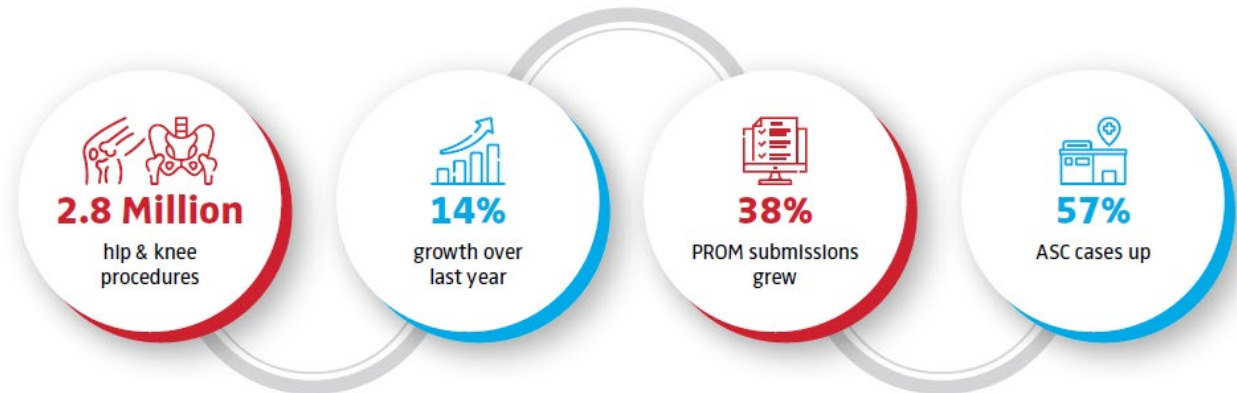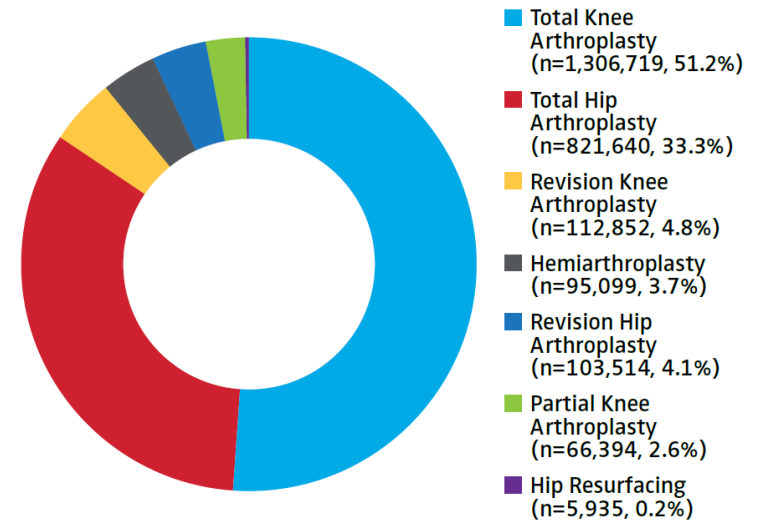
The American Joint Replacement Registry

Figure 1.3 Cumulative Procedure Volume, 2012-2021 (N=2,550,232)
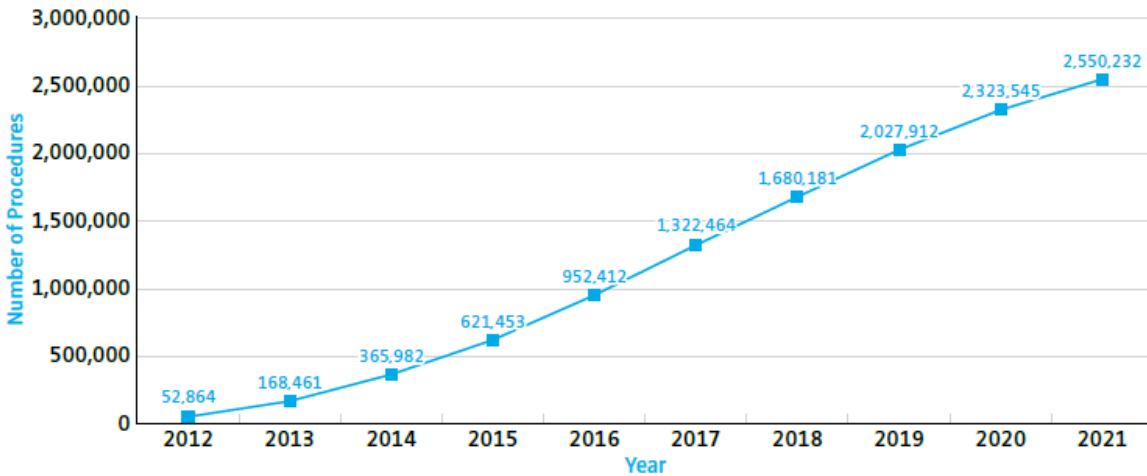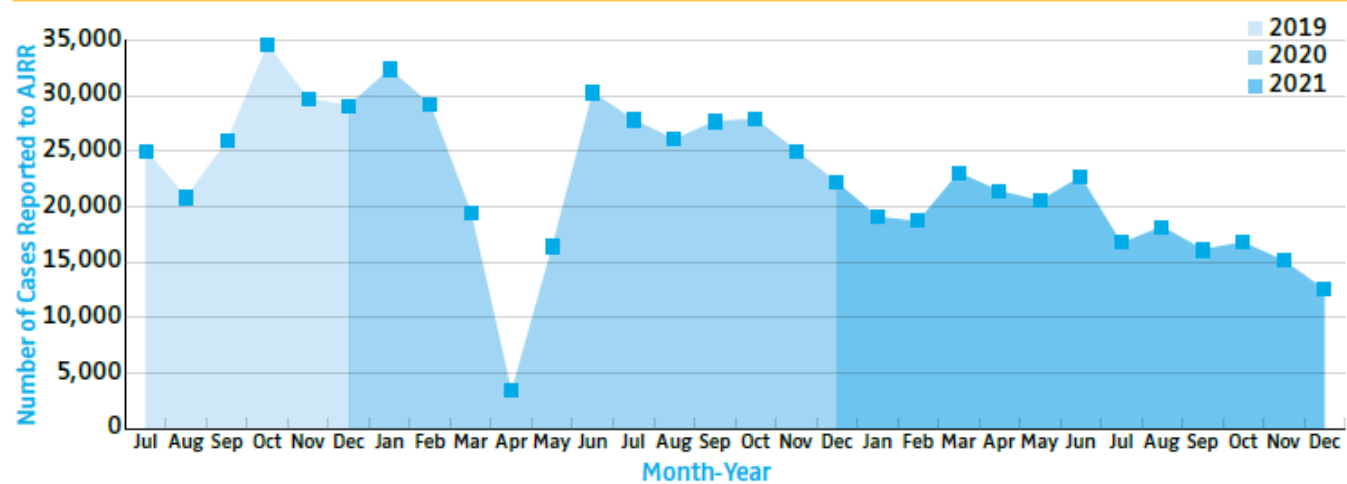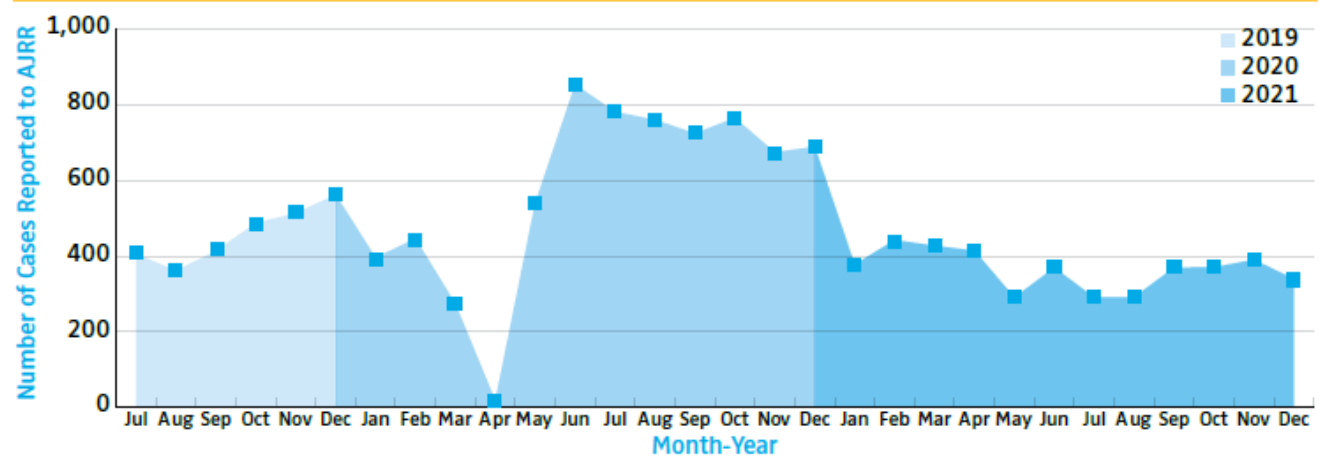

Figure 1.1 Hospital Case Volume by Month, Jul 2019 - Dec 2021

Over **1,250 data submitting institutions** and 11,400 registered surgeons across all 50 states

Data representing **over 3 million procedures** from over 2.6 million patients through 2022

Figure 1.2 Ambulatory Surgical Center Case Volume by Month, Jul 2019 - Dec 2021

LESSONS LEARNED

1 Establish the registry's purpose – focus on key data elements needed to answer the important questions that will lead to quality improvement outcomes for the specialty area

2 Data capture is key – streamline capture where possible and understand clinical workflows

3 Data linkage is a core component of the AAOS registry program's success

4 Establish strong partnerships and collaborations specific to the specialty area

5 Plan forward related to data use and re-use opportunities

Identify the core elements related to episodes of care and consider how patient reported outcomes factor into the clinical workflow for data collection and what is needed to derive value from the data

Registry Data Collection: Core Data Elements

These *Core Data Elements* are collected across all AAOS and Collaborative Registries.

Procedure
Patient
- Name (Last, First), Date of Birth, SSN
- Diagnosis (ICD-10, CPT)
- Gender
- Race/Ethnicity
- Height + Weight/Body Mass Index
- Payer Status

Site of Service
- Name and Address (TIN/NPI)

Surgeon
- Name (NPI)

Procedure
- Type (ICD-10, CPT)
- Date of Surgery
- Implants (Manufacturer, Lot #)
- Anesthesia Type

Procedure, continued
- Length of Stay
- American Society of Anesthesiologists Score
- Charlson Comorbidity Index (CCI)

Comorbidities & Complications
- Comorbidities (ICD-10)
- COVID-19 as prior diagnosis
- Height + Weight/Body Mass Index
- Length of Stay
- American Society of Anesthesiologists Score
- Charlson Comorbidity Index (CCI)
- Operative and Post-operative Complications

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Registry Program
Improving Orthopaedic Care Through Data

PROMs by Registry

AJRR	SER	MsTR	ASR
PROMIS-10	PROMIS-10	PROMIS-10	PROMIS-10
VR-12	VR-12	VR-12	VR-12
HOOS, Jr	ASES	MSTS	ODI / NDI
KOOS, Jr	SANE	TESS	PROMIS Physical Function
Also Accepts: SF-36 v1 HOOS/KOOS Oxford Hip and Knee Scores Harris Hip Score WOMAC SF-12 EQ-5D PROMIS-29, PROMIS-CAT* PROMIS Anxiety PROMIS Depression PROMIS Pain Interference	*Also Accepts*: PROMIS Upper Extremity PROMIS-29, PROMIS-CAT* PROMIS Anxiety PROMIS Depression PROMIS Pain Interference		Numeric Rating Scale
			Also Accepts: PROMIS-29 PROMIS-CAT* PROMIS Depression PROMIS Anxiety PROMIS Pain Interference EQ-5D

Option to select *PROMIS-10* or *VR-12*. ASR sites also select between *ODI/NDI* **or** *PROMIS Physical Function*.

*Accepting Summary Scores Only

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2 Data capture is key – streamline capture where possible and understand clinical workflows

Comparisons with ex-U.S. registries – longitudinal coverage of patients can be a challenge for U.S. registries – linking with CMS data has increased the ability for the AAOS registries to track outcomes for the over 65 patient population thus increasing the value of the data and the registry. Discussions are ongoing as to linking private payer data.

Qualified Clinical Data Registry

- A Qualified Clinical Data Registry (QCDR) is a CMS-approved entity that collects medical or clinical data for the purposes of patient and disease tracking to foster improvement in the quality of care provided
- AAOS maintains a QCDR designation
  - Specialty society driven participation in the Quality Payment Program (QPP) Merit-incentive Based Payment System (MIPS)
- Benefits of QCDR participation:
  - Qualify for MIPS Promoting Interoperability (PI) and Improvement Activities
  - Performance feedback available via the RegistryInsights® dashboards
  - Assistance with MIPS quality measure data submission

Integration of Medicare Data

- Access to **Medicare claims** linked by full identifiers for longitudinal tracking
- Follow outcomes of Registry patients occurring at non-Registry participating institutions
- 2012-2020 Medicare data for all patients represented in Registry
  - Inpatient claims (148 data elements)
  - Outpatient claims (122 data elements)

3   Data linkage is a core component of the AAOS registry program's success

Unlocking the power of registry data for stakeholders and participants requires planning upfront; thinking through priorities and resource needs in the early years is critical to building a solid foundation...

About the AAOS Registry Analytics Institute®

AAOS | Registry Analytics Institute
AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS | *Improving Orthopaedic Care Through Data*

The goal of the AAOS Registry Analytics Institute® (RAI) is to provide a resource to the scientific community to further understand and improve orthopaedic and musculoskeletal care by making data analyses available. Investigators can submit hypotheses about information in AAOS registries. The RAI supports the AAOS mission while also providing clinicians and scientist clinicians access to information beyond what is already published.

Why Do Sites Participate?

Compare your practice to **national performance** benchmarks

Access to on-demand practice specific **reports and dashboards**

Qualify for The Joint Commission Advanced Certifications (THKR & ACSS)

Attain certification credits for **ABOS MOC & ABNS CC**

Facilitate site, practice-specific, **payer-incentivized performance improvement** programs such as Aetna IOQ & Blue Distinction

Use for reporting to **quality improvement programs** such as the QPP Merit-based Incentive Payment System (MIPS)

Inform orthopaedic practice & contribute to **orthopaedic advocacy**

Improve the **value of care** delivered to Patients

RegistryInsights® Dashboards

On-demand practice specific dashboards

Compare your practice to national performance benchmarks

Unlimited surgeon accounts with access to system, site, and surgeon level dashboards

Plan froward related to data use and re-use opportunities

2022 Paper & Poster Presentations

POSTER AWARD!

P0092 "Increased Risk of Revision with Posterior Stabilized Total Knee Arthroplasty: An Analysis from the American Joint Replacement Registry"

Poster selected by the AAOS Central Program Committee as the
Best Poster in the Adult Reconstruction Knee classification
at the 2022 AAOS Annual Meeting

Poster/ Presentation	Registry	Event	Location
Poster P0092	AJRR	Increased Risk of Revision with Posterior Stabilized Total Knee Arthroplasty: An Analysis from the American Joint Replacement Registry	Adult Reconstruction Knee Poster Session 1, Academy Hall
Poster P0093	AJRR	Polyethylene Crosslinking and Antioxidant Use Not Associated with Risk of Revision after Total Knee Arthroplasty: An Analysis from the American Joint Replacement Registry	Adult Reconstruction Knee Poster Session 1, Academy Hall
Poster P0072	AJRR	Spinal vs. General Anesthesia Use in Total Knee Arthroplasty: Are There Differences in Complication and Readmission Rates?	Adult Reconstruction Knee Poster Session 1, Academy Hall
Presentation	AJRR	Engagement Theater: Reimagining Prior Authorization for Musculoskeletal Care	Engagement Theater in Academy Hall
Presentation	ASR	Engagement Theater: American Spine Registry	Engagement Theater in Academy Hall
Presentation	AJRR	Engagement Theater: The Joint Commission Advanced Total Hip and Total Knee Replacement Certification	Engagement Theater in Academy Hall
Presentation	ASR	Engagement Theater: The Joint Commission Advanced Certification in Spine Surgery	Engagement Theater in Academy Hall
ICL	All	Research in Private Practice: How to Measure and Improve	McCormick Place, Room S103d
Presentation 355	AJRR	Spinal Anesthesia Use in Total Hip Arthroplasty: Improved Outcomes and Shorter Operative Time in the AJRR Population	Adult Reconstruction Hip VI, Room N427
Presentation	SER	Engagement Theater: Shoulder & Elbow Registry	Engagement Theater in Academy Hall
Presentation 493	AJRR	Dislocation Rates of Primary THA in Patients with Prior Lumbar Spine Fusion and Lumbar Degenerative Disc Disease with and without Utilization of Dual Mobility Cups: A Joint Registry Study	Adult Reconstruction Hip VII, Room S406b
Presentation	AJRR	Engagement Theater: American Joint Replacement Registry	Engagement Theater in Academy Hall
Presentation	FTR	Engagement Theater: Fracture & Trauma Registry	Engagement Theater in Academy Hall

https://www.aaos.org/registries/publications/papers-and-presentations/

Ongoing Challenges

- Data collection in ambulatory settings

- Uptake and participation in new registries

- PROMS and other longer-term (non-episodic) measures

- Resourcing and managing inbound research requests

- Breaking even (or better) financially; sustainability